DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/3/09 has been entered.

Response to Arguments

On pages 9-12, applicant argues that Marks fails to disclose tracking the objects based in part on a probability that one of the objects included in the first frame will be included in a second frame at a second point in time.. While the applicant's points are understood, the examiner respectfully disagrees. See for example Marks column 5, lines 45-67. There Marks discloses determining probabilities of objects included in a video frame. Marks further discloses in column 6, lines 18-29, that the probabilities are used to control the video camera to provide further tracking images. By controlling the video camera to provide further tracking images, the probabilities are used to determine the location of an object in a second frame at a second point in time. Therefore the rejection has been maintained. .

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2, 4-9, 12-13, 15-16, 19, 25-26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson et al. (Moving Object Detection and Event Recognition Algorithms for Smart Cameras), (hereinafter referred to as "Olson") in view of Tserng (6570608) in further view of Marks et al. (5845009), (hereinafter referred to as "Marks").

Regarding claim 1, Olson discloses an apparatus that relates to tracking moving objects using smart cameras (Olson: page 159, Abstract). This apparatus comprises "receiving a plurality of series of video frames generated by a plurality of image sensors, each having a field-of-view, which monitor portions of a monitored environment" (Olson: page 159, Introduction section, wherein the image sensors are the cameras; page 166, left hand column), and "concurrently tracking, based on an analysis of the monitored environment over time and independent of calibration among the image sensors and monitored environment, a plurality of objects within the environment as the objects move between fields-of-view and an object within one field-of-view based on the plurality of received series of frames" (Olson: page 166, wherein by each camera containing an independent core engine, the cameras will track the object independent of the calibration of the cameras and environment). However, this apparatus lacks tracking the plurality of objects as claimed. Tserng teaches that prior art smart cameras will need new algorithms to implement the smart monitoring functions

(Tserng: column 1, lines 25-24). To help alleviate this need, Tserng discloses an apparatus in which Tserng "tracks a plurality of objects" (Tserng: figures 10-12; column 6, lines 62-65). Marks teaches that prior art tracking systems do not provide the performance desired for various tracking applications (Marks: column 1, lines 50-57). To help alleviate this problem, Marks discloses an apparatus comprising "tracking objects based on a probability that an object included in one video frame at a first point in time will be included in a video frame at a second point in time" (Marks: column 5, lines 40-44; column 6, lines 18-29; column 7, lines 33-40, wherein the weighted probabilities are used to indicate if the object is at a first and second point). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to take the apparatus disclosed by Sengupta and add the tracking taught by Tserng and Marks in order to be able to successfully track more than one object throughout a scene.

Regarding claim 2, Olson discloses "the image sensors are cameras" (Sengupta: page 159, Introduction section).

Regarding claim 4, Tserng in view of Marks disclose "storing a plurality of blob states over time each including the number of objects included in the blob and a blob signature" (Tserng: column 11, lines 26-40, wherein the blob states are the car and object blobs; the number of objects is the number of blobs stored in memory, in this case 2; the blob signature is the blob location) and "storing a plurality of transition likelihood values representing the probability that objects

within one blob at one instant correspond to objects within other blobs at other time instants" (Tserng: column 13, lines 15-27, wherein the blobs and objects are analyzed to find a correlation; Marks: column 5, lines 40-44; column 6, lines 25-28; column 7, lines 33-40, wherein the likelihood values are the probabilities).

Regarding claim 5, Marks discloses "altering the stored transition probabilities upon analysis of additional video frames" (Marks: figure 2; column 4, lines 25-45; column 5, lines 40-44; column 6, lines 18-25, wherein by continually capturing new images, the probabilities are calculated thus changing or altering the weighted total probability).

Regarding claim 6, Tserng discloses "storing object data indicating correspondences between objects and blob states" (Tserng: column 13, lines 15-27, wherein the correspondence is the linkage indicating the correspondence between the object and the blob)

Regarding claim 7, Tserng in view of Marks disclose "generating a tracking solution based on the blob states and transition probabilities" (Tserng: column 6, lines 62-67; column 7, lines 7-15; Marks: column 6, lines 25-28).

Regarding claim 8, Tserng discloses "generating tracking metadata including one of: object track data" (Tserng: column 7, lines 7-15, wherein the object track data is the motion graph which indicates the track, or path, the object traverses).

Regarding claim 9, Tserng discloses "selecting a rule set to analyze tracking metadata and evaluating, using a rules engine, the metadata based on

the rule set" (Tserng: column 7, lines 7-15. By applying event labels such as Enter, Exit, Rest, Move, ect., Tserng is selecting a rule set to analyze the motion graph to determine the correct label to apply to the specific event).

Regarding claim 12, although not disclosed, it would have been obvious to select the rule set to detect hazards to children (Official Notice). Doing so would have been obvious in order to help better provide safety and security to a wide range of people.

Regarding claim 13, Olson discloses "monitoring public safety" (Olson: page 160, left hand column, lines 1-10, wherein by monitoring for car bombs, Olson is monitoring public safety).

Regarding claim 15, note the examiners rejection for claims 1 and 8.

Regarding claim 16, Tserng discloses "a rules engine in communication with the tracking module and receiving the tracking metadata" (Tserng: column 7, lines 7-15, wherein the tracking metadata or motion graph is analyzed using a set of rules which determine the correct labels to apply to the detected events).

Regarding claim 19, note the examiners rejection for claims 12 and 15.

Regarding claims 25 and 26, although not disclosed, it would have been obvious for the fields-of-view to be non-overlapping (Official Notice). Doing so would have been obvious in order to provide a wider range of coverage.

Regarding claim 29, note the examiners rejection for claims 25-26.

4. Claims 10-11, 17-18, 20, 27-28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson et al. (Moving Object Detection and Event Recognition

Algorithms for Smart Cameras), (hereinafter referred to as "Olson") in view of Tserng (6570608) in further view of Marks et al. (5845009), (hereinafter referred to as "Marks") in further view of Brodsky et al. (6731805), (hereinafter referred to as "Brodsky").

Regarding claim 10, note the examiners rejection for claim 1, and in addition, claim 10 differs from claim 1 in that claim 10 further requires monitoring parking lot security. Brodsky teaches that surveillance is used in many settings such as parking lots (Brodsky: column 1, lines 15-18). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the parking lot security taught by Brodsky in order to provide protection in a wide variety of locations.

Regarding claim 11, Brodsky discloses "selecting a rule to detect property theft" (Brodsky: column 1, lines 15-18).

Regarding claim 17, note the examiners rejection for claims 10 and 15.

Regarding claim 18, note the examiners rejection for claims 11 and 15.

Regarding claim 20, note the examiners rejection for claims 11 and 15.

Regarding claim 27, note the examiners rejection for claims 25-26.

Regarding claim 28, note the examiners rejection for claims 25-26.

Regarding claim 30, note the examiners rejection for claims 25-26.

5. Claims 14, 21, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson et al. (Moving Object Detection and Event Recognition Algorithms for Smart Cameras), (hereinafter referred to as "Olson") in view of Tserng

(6570608) in further view of Marks et al. (5845009), (hereinafter referred to as "Marks") in further view of Carlbom et al. (6441846), (hereinafter referred to as "Carlbom").

Regarding claim 14, note the examiners rejection for claim 1, and in addition, claim 1 differs from claim 14 in that claim 14 further requires determining merchandizing and operations statistics. Carlbom teaches that trajectories can be used to determine merchandizing and operations statistics (Carlbom: column 1, lines 25-34, wherein the merchandizing and operations statistics are the advertisement effectiveness and consumer traffic reports). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the tracking taught by Carlbom in order to better help provide feedback of different product placement locations.

Regarding claim 21, note the examiners rejection for claims 14 and 15.

Regarding claim 31, note the examiners rejection for claims 25-26.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID CZEKAJ whose telephone number is (571)272-7327. The examiner can normally be reached on Mon-Thurs and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dave Czekaj/
Primary Examiner, Art Unit 2621